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PATENT APPLICATION

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IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): I-Jong Lin

Confirmation No.: 8992

Application No.: 10/718,151

Examiner: Alex Kok Soon Liew

Filing Date: November 20, 2003

Group Art Unit: 2624

Title: Methods and Systems for Processing Displayed Images

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on 02/16/2010.

- ☒ The fee for filing this Appeal Brief is \$540.00 (37 CFR 41.20). minus \$510 for Appeal Brief
☐ No Additional Fee Required. previously filed and paid for on 9-18-2008.
(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

- ☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

☐ 1st Month
\$130

☐ 2nd Month
\$490

☐ 3rd Month
\$1110

☐ 4th Month
\$1730

- ☐ The extension fee has already been filed in this application.

- ☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of \$30.00. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees.

Respectfully submitted,

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APPEAL BRIEF

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Sir:

This is an Appeal Brief under Rule 41.37 appealing the decision of the Primary Examiner dated December 16, 2009 (the “final Office Action”). Each of the topics required by Rule 41.37 is presented herewith and is labeled appropriately.

I. Real Party in Interest

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 11445 Compaq Center Drive W., Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. Related Appeals and Interferences

There are no appeals or interferences related to the present application of which the Appellant is aware.

III. Status of Claims

Claims 1-25 are pending in the application. Of these, claims 1-6 are allowed. Claims 9, 15, and 21 were indicated as containing allowable subject matter, but are still at issue in this appeal because each depends from a rejected base claim. Claims 7, 8, 10-14, 16-20, and 22-25 stand finally rejected. Accordingly, Appellant appeals from the final rejection of claims 7, 8, 10-14, 16-20, and 22-25, which claims are presented in the Appendix.

IV. Status of Amendments

No amendments have been filed subsequent to the final Office Action of December 16, 2009, from which Appellant takes this appeal.

V. Summary of Claimed Subject Matter

With reference to Fig. 2, an image capture device 20, e.g., a camera, a digital or analog video device, etc., captures images which are displayed on a display 22, which may be occluded by a person or object interposed between the image capture device 20 and the display 22. The image capture device 20 may be any type of digital image capture device and the display can be any type of display including a projector. The images are then passed to processor 24, e.g., a personal or other computer, for processing in accordance with the present invention. This processing involves controlling both the image capture device 20 and the display 22 to cast a virtual shadow of any object(s) which are blocking the image capture device's view of the display. This is accomplished, according to exemplary embodiments of the present invention, by using both an active and a passive testing technique. The passive technique estimates the image rendered on the display 22 and uses this estimate to determine whether individual pixels are being occluded, without manipulating the display 22. The active technique changes pixels on the display 22 to a known color and then the processor 24 observes changes (or lack thereof) in the images subsequently captured by the image capture device 20. Thus, according to exemplary embodiments of the present invention, the passive technique can be used to identify pixels which are potentially occluded and then, using these pixels as seed areas, the active technique tests and grows these regions outwardly until the occlusion's boundaries are discovered. (*Appellant's specification, para. [0022], and Figure 2*).

An exemplary image processing technique is described with respect to the flow diagrams of FIG. 4(a) and 4(b) as well as the state diagrams of FIGS. 3(a)-3(c). Referring first to the flow diagram of FIG. 4(a), a general method for image processing according to an exemplary embodiment involves a passive testing step 400, wherein captured pixel values are

compared with expected values, and an active testing step 410, wherein portions (or all of) the display are driven with a reserved value and the results are analyzed. Steps 400 and 410 can be performed sequentially or in parallel. A more detailed exemplary image processing method is shown in FIG. 4(b). Therein, at step 40, an image is generated to display 22. At the first iteration all of the display pixels have a value associated with the image, however during subsequent iterations step 40 involves generating those pixels in the active testing state 34 and active confirmed state 36 using a reserved value and generating those pixels in the passive testing state 30 and passive suppressed state 32 with the image values. The contents of the display 22 are then captured by the image capture device 20 at step 42. If nothing is blocking the line of sight path between the image capture device 20 and the display 22, then the captured contents should match the image on the display. If, on the other hand, there is an object occluding the displayed image, then the captured contents may have some disparity relative to the displayed image. At step 44, processor 24 performs a first pass analysis of the captured contents. This involves a pixel-by-pixel analysis of the captured contents relative to corresponding pixels on the display 22 and selective state transitions based on that analysis. Once the analysis step 44 has been completed for all of the image capture device pixels, the process then moves on to step 46, wherein regions are grown out around active confirmed pixels. Next, at step 48, pixels are suppressed, or unsuppressed, based on their proximity D at to image capture device pixels in the active testing state 34. (*Appellant's specification, paras. [0024]-[0028], and Figures 3A through 4B*).

Turning now to the claims, Appellant's independent claims at issue in this appeal recite the following subject matter.

Claim 1 recites:

A method for displaying an occlusion of a display device (22) on said display device (22), comprising the steps of:

- generating an image (*see, Fig. 6A*) on said display device (22) (*Appellant's specification, para. [0024], and Figures 3A through 4B*);
- capturing first contents (*see, Fig. 6B*) from said image displayed on said display device (22) with an image capture device (20), said image capture device (20) being spaced from said display device (22) (*Appellant's specification, paras. [0024] and [0030], and Figures 3A through 4B*);
- analyzing said first contents to identify a first set of potentially occluded pixels (*Appellant's specification, paras. [0024]-[0026], and Figure 4B*);
- changing a value of said first set of potentially occluded pixels to generate a modified image (*see, Figs. 6B and 7A*) on said display device (22), (*Appellant's specification, para. [0031]*);
- capturing second contents from said modified image (*see, Figs. 7A and 7B*) displayed on said display device (22) with said image capture device (20) (*Appellant's specification, para. [0031]*);
- selectively confirming said first set potentially occluded pixels as confirmed occluded pixels based on said second contents (*Appellant's specification, para. [0032]*); and
- generating said confirmed occluded pixels on said display device (22) using a predetermined display value (*Appellant's specification, para. [0032], and Figure 3A*).

Claim 7 recites:

A method for processing a displayed image comprising the steps of:

- passively testing a first version of said displayed image captured by an image capture device (20) to determine if a portion of said displayed image is blocked from said image capture device (20) (*Appellant's specification, paras. [0022], [0024], and [0026], and Figure 4A*); and
- actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device (20), wherein said second version of said displayed image is captured by said image capture device (20) after being displayed on an electronic display device (22) (*Appellant's specification, paras. [0022], [0024], and [0026], and Figure 4A*).

Claim 13 recites:

A computer-readable medium containing a program that performs the steps of:
passively testing a first version of a displayed image captured by an image capture device (20) to determine if a portion of said displayed image is blocked from said image capture device (20) (*Appellant's specification, paras. [0022], [0024], and [0026], and Figure 4A*); and
actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device (20), wherein said second version of said displayed image is captured by said image capture device (20) after being displayed on an electronic display (*Appellant's specification, paras. [0022], [0024], and [0026], and Figure 4A*).

Claim 19 recites:

An image processing system comprising:
an electronic display (22) for displaying an image;
an image capture device (20) for capturing a first version of said displayed image; and
a processor (24), connected to said display (22) and said image capture device (20) for passively testing said first version of said displayed image captured by said image capture device (20) to determine if a portion of said displayed image is blocked from said image capture device (20) (*Appellant's specification, paras. [0022], [0024], and [0026], and Figure 4A*); and for actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device (20), wherein said second version of said displayed image is captured by said image capture device (20) after being displayed on said electronic display (22) (*Appellant's specification, paras. [0022], [0024], and [0026], and Figure 4A*).

Claim 25 recites:

An image processing system comprising:
means for electronically displaying an image (22);
means for capturing a first version of said displayed image (20); and
means, connected to said means for electronically displaying (22) and said means for capturing (20), for passively testing (24) said first version of said displayed image captured by said means for capturing (20) to determine if a portion of said displayed image is blocked from said means for capturing (20) (*Appellant's specification, paras. [0022], [0024], and [0026], and Figure 4A*) and for actively testing said portion of said displayed image based

on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said means for capturing (20), wherein said second version of said displayed image is captured by said means for capturing (20) after being displayed on said means for electronically displaying (22) (*Appellant's specification, paras. [0022], [0024], and [0026], and Figure 4A*).

VI. Grounds of Rejection to be Reviewed on Appeal

The final Office Action raised the following grounds of rejection.

(1). Claims 7, 8, 10, 11, 13, 14, 16, 17, 19, 20, 22, 23, and 25 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,345,313 to Blank (hereinafter Blank).

(2). Claims 12, 18, and 24 were rejected under 35 U.S.C. § 103(a) over the combined teachings of Blank and U.S. Patent No. 5,208,871 to Eschbach (hereinafter Eschbach).

Accordingly, Appellant hereby requests review of each of these grounds of rejection in the present appeal.

VII. Argument

(1). Claims 7, 8, 10, 11, 13, 14, 16, 17, 19, 20, 22, 23, and 25 are patentable over *Blank*:

Claim 7 recites:

A method for processing a displayed image comprising the steps of:
 passively testing a first version of said ***displayed image captured by an image capture device*** to determine if a portion of said displayed image is blocked from said image capture device; and
 actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device, wherein said second version of said displayed image is captured by said image capture device after being displayed on ***an electronic display device***.

(Emphasis added).

In contrast, Blank does not teach or suggest “a method for processing a displayed image comprising the steps of passively testing a first version of said displayed image captured by an image capture device to determine if a portion of said displayed image is blocked from said image capture device, and actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device, wherein said second version of said displayed image is captured by said image capture device after being displayed on an electronic display device.” (Claim 7). The final Office Action argues that “Blank reads on a method for processing a display image (see figure 1) comprising steps of passively testing a first version of a displayed image . . . , and . . . actively testing a portion of said displayed image . . . being displayed on said display device . . .” (final Office Action, pp. 4-5).

However, the final Office Action’s assertions that Blank teaches the recitations of claim 7 are incorrect. Blank is merely directed to the traditional systems and methods of

filming an actor in front of a monochromatic background, which background is later replaced with a desired background image, while retaining the actor in the foreground. Specifically, Blank teaches a “monochrome background 24, which can be any desired color.” (Blank, col. 6, ll. 2-3). In sum, Blank simply teaches the use of a blue or green screen in a system that utilizes chromakey, and does not teach a display device used to produce a displayed image.

On this point, the final Office Action argues that with regard to Figure 1 of Blank, “the object, 22, and the display device, 24, is constantly shown on the electronic display device, 20.” (final Office Action, p. 2). Blank teaches that “video monitor 20, such as a standard RGB/CGA display, is mounted in the apparatus 12 and the monitor 20 is electrically connected to the system 10 *for displaying a video image, such as the image of a model 22.*” (Blank, col. 5, l. 65 through col. 6, l. 1) (emphasis added). Blank does not teach or suggest that the displayed image on the monitor 20 is captured by an image capture device. In fact, it is clear from Fig. 1 that the video camera 16 of Blank is always directed toward the subject 22 and the monochromatic background 24, and is entirely incapable of imaging the monitor 20. Further, Blank does not teach or suggest that the video camera 16 is capable of imaging the images displayed on the monitor 20. Therefore, Blank does not teach or suggest a displayed image captured by an image capture device.

Further, the final Office Action is not considering the recitation that “wherein said second version of *said displayed image is captured by said image capture device* after being displayed on an electronic display device.” (Claim 7) (emphasis added). On this point, the final Office Action argues that “[s]ince the images in figures 5A-5D are taken in sequences, and the images of the object 22 and display device 24, are constantly displayed on the *electronic display*, 22, Blank reads on wherein said second version of said displayed image is captured by means for capturing after being displayed on said means for *electronically*

displaying.” (final Office Action, p. 2). In essence, Blank teaches displaying on a monitor 20 an image of a subject 22 and a monochromatic background 24. This cannot be interpreted to include capturing with an image capture device an image displayed on an electronic display since the monochromatic background is not an electronic display.

Still further, Blank does not teach or suggest “*passively testing* a first version of said displayed image captured by an image capture device to determine if a portion of said displayed image is blocked from said image capture device; and *actively testing* said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device.” (Claim 7) (emphasis added). It is clear that although the system of Blank includes a processor configured to process images, the processor of Blank is only configured to store a digital image of an object and a background, locate the edge of an object, and remove portions of the image (i.e., the background) that are outside the edge. (See, Blank, Abstract; *passim*). Blank is silent with regard to a processor configured to passively and actively test a displayed images to determine if a portion of the displayed image is blocked from an image capture device.

Finally, in contrast to Blank, claim 7 recites displayed images being displayed on an electronic display device, not merely a monochromatic background. The display device is then imaged with an imaging device including any objects in the foreground, e.g. a person. The image is then processed to create a virtual shadow of any objects in the foreground, i.e., in front of the electronic display device. This subject matter is clearly not taught or suggested by Blank.

Respectfully, to anticipate a claim, a reference must teach each and every element of the claim, and “the identical invention must be shown *in as complete detail as contained in*

the ... claim.” MPEP 2131 citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987) and *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989) (emphasis added). Moreover, “[t]he prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *NetMoneyIn v. Verisign*, (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542 (Fed. Cir. 1983)).

In the present case, Blank clearly does not disclose the claimed invention with each and every claimed element in the same amount of detail or as arranged in the claim. Consequently, because Blank clearly fails to satisfy the requirements for anticipating claim 7, the rejection of claim 7 and its dependent claims should not be sustained.

Claim 13:

Claim 13 recites:

A computer-readable medium containing a program that performs the steps of:
passively testing a first version of ***a displayed image captured by an image capture device*** to determine if a portion of said displayed image is blocked from said image capture device; and
actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device, wherein said second version of said displayed image is captured by said image capture device after being displayed on ***an electronic display***.

(Emphasis added).

In contrast, Blank does not teach or suggest “a computer-readable medium containing a program that performs the steps of passively testing a first version of a displayed image captured by an image capture device to determine if a portion of said displayed image is blocked from said image capture device, and actively testing said portion of said displayed

image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device, wherein said second version of said displayed image is captured by said image capture device after being displayed on an electronic display.” (Claim 13).

The final Office Action argues that “with regard to claim[] 13 . . . see the rationale for claim 7.” (final Office Action, p. 6). Thus, the final Office Action rejects claim 13 using the arguments presented in connection with independent claim 7. In light of this, the final Office Action argues that “Blank reads on a method for processing a display image (see figure 1) comprising steps of passively testing a first version of a displayed image . . . , and . . . actively testing a portion of said displayed image . . . being displayed on said display device” (final Office Action, pp. 4-5).

However, the final Office Action’s assertions that Blank teaches the recitations of claim 13 are also incorrect. As similarly stated above in connection with independent claim 7, Blank is merely directed to the use of a blue or green monochromatic screen in a system that utilizes chromakey, and does not teach a display device used to produce a displayed image. (*See*, Blank, col. 6, ll. 2-3).

On this point, the final Office Action argues that with regard to Figure 1 of Blank, “the object, 22, and the display device, 24, is constantly shown on the electronic display device, 20.” (final Office Action, p. 2). However, as similarly argued above in connection with the patentability of independent claim 7, the video camera 16 of Blank is entirely incapable of imaging the monitor 20, and does not teach or suggest that the video camera 16 is capable of imaging the images displayed on the monitor 20. Therefore, Blank does not teach or suggest a displayed image captured by an image capture device.

Again, as similarly argued above in connection with the patentability of independent claim 7, the final Office Action is not considering the recitation that “wherein said second version of said displayed image is captured by said image capture device after being displayed on *an electronic display device*.” (Claim 13) (emphasis added). Display of the subject 22 and monochromatic background 24 of Blank on a monitor cannot be interpreted to include capturing with an image capture device an image displayed on an electronic display since the monochromatic background is not an electronic display.

Still further, as similarly argued above in connection with the patentability of independent claim 7, Blank does not teach or suggest “*passively testing* a first version of said displayed image captured by an image capture device to determine if a portion of said displayed image is blocked from said image capture device; and *actively testing* said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device.” (Claim 13) (emphasis added). Blank is silent with regard to a processor configured to passively and actively test a displayed images to determine if a portion of the displayed image is blocked from an image capture device.

Finally, as similarly argued above in favor of the patentability of independent claim 7, in contrast to Blank, claim 13 recites displayed images being displayed on an electronic display device, not merely a monochromatic background, after which the display device is imaged with an imaging device including any objects in the foreground, e.g. a person. The image is then processed to create a virtual shadow of any objects in the foreground, i.e., in front of the electronic display device. This subject matter is clearly not taught or suggested by Blank.

Respectfully, to anticipate a claim, a reference must teach each and every element of the claim, and “the identical invention must be shown *in as complete detail as contained in the ... claim.*” MPEP 2131 citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987) and *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989) (emphasis added). Moreover, “[t]he prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *NetMoneyIn v. Verisign*, (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542 (Fed. Cir. 1983)).

In the present case, Blank clearly does not disclose the claimed invention with each and every claimed element in the same amount of detail or as arranged in the claim. Consequently, because Blank clearly fails to satisfy the requirements for anticipating claim 13, the rejection of claim 13 and its dependent claims should not be sustained.

Claim 19:

Claim 19 recites:

An image processing system comprising:

an electronic display for displaying an image;

an image capture device *for capturing a first version of said displayed image;* and

a processor, connected to said display and said image capture device for passively testing said first version of *said displayed image captured by said image capture device* to determine if a portion of said displayed image is blocked from said image capture device; and for actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device, wherein said second version of said displayed image is captured by said image capture device after being displayed on *said electronic display.*

(Emphasis added).

In contrast, Blank does not teach or suggest “[a]n image processing system comprising an electronic display for displaying an image, an image capture device for capturing a first version of said displayed image, and a processor, connected to said display and said image capture device for passively testing said first version of said displayed image captured by said image capture device to determine if a portion of said displayed image is blocked from said image capture device; and for actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device, wherein said second version of said displayed image is captured by said image capture device after being displayed on said electronic display.” (Claim 19).

Again, the final Office Action argues that “with regard to claim[] 19 . . . see the rationale for claim 7.” (final Office Action, p. 6). Thus, the final Office Action rejects claim 19 using the arguments presented in connection with independent claim 7. In light of this, the final Office Action argues that “Blank reads on a method for processing a display image (see figure 1) comprising steps of passively testing a first version of a displayed image . . . , and . . . actively testing a portion of said displayed image . . . being displayed on said display device” (final Office Action, pp. 4-5).

However, the final Office Action’s assertions that Blank teaches the recitations of claim 19 are incorrect. As similarly stated above in connection with independent claims 7 and 13, Blank is merely directed to the use of a blue or green monochromatic screen in a system that utilizes chromakey, and does not teach a display device used to produce a displayed image. (*See*, Blank, col. 6, ll. 2-3).

On this point, the final Office Action argues that with regard to Figure 1 of Blank, “the object, 22, and the display device, 24, is constantly shown on the electronic display

device, 20.” (final Office Action, p. 2). However, as similarly argued above in connection with the patentability of independent claims 7 and 13, the video camera 16 of Blank is entirely incapable of imaging the monitor 20, and does not teach or suggest that the video camera 16 is capable of imaging the images displayed on the monitor 20. Therefore, Blank does not teach or suggest “an image capture device for capturing a first version of said displayed image.” (Claim 19).

Again, as similarly argued above in connection with the patentability of independent claims 7 and 13, the final Office Action is not considering the recitation that “wherein said second version of said displayed image is captured by said image capture device after being displayed on *said electronic display*.” (Claim 19) (emphasis added). Display of the subject 22 and monochromatic background 24 of Blank on a monitor cannot be interpreted to include capturing with an image capture device an image displayed on an electronic display since the monochromatic background is not an electronic display.

Still further, as similarly argued above in connection with the patentability of independent claims 7, and 13, Blank does not teach or suggest “a processor . . . for *passively testing* said first version of said displayed image captured by said image capture device . . . and for *actively testing* said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image. (Claim 19) (emphasis added). Blank is silent with regard to a processor configured to passively and actively test a displayed images to determine if a portion of the displayed image is blocked from an image capture device.

Finally, in contrast to Blank, claim 19 recites displayed images being displayed on an electronic display device, not merely a monochromatic background. The display device is then imaged with an imaging device including any objects in the foreground, e.g. a person.

The image is then processed to create a virtual shadow of any objects in the foreground, i.e., in front of the electronic display device. This subject matter is clearly not taught or suggested by Blank.

Respectfully, to anticipate a claim, a reference must teach each and every element of the claim, and “the identical invention must be shown *in as complete detail as contained in the ... claim.*” MPEP 2131 citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987) and *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989) (emphasis added). Moreover, “[t]he prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *NetMoneyIn v. Verisign*, (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542 (Fed. Cir. 1983)).

In the present case, Blank clearly does not disclose the claimed invention with each and every claimed element in the same amount of detail or as arranged in the claim. Consequently, because Blank clearly fails to satisfy the requirements for anticipating claim 19, the rejection of claim 19 and its dependent claims should not be sustained.

Claim 25:

Claim 25 recites:

An image processing system comprising:

means for electronically displaying an image;

means for *capturing a first version of said displayed image;* and

means, connected to said means for electronically displaying and said means for capturing, for passively testing said first version of said displayed image captured by said means for capturing to determine if a portion of said displayed image is blocked from said means for capturing and for actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm

whether said portion of said displayed image is blocked from said means for capturing, wherein said second version of said displayed image is captured by said means for capturing after being displayed on *said means for electronically displaying*.

(Emphasis added).

In contrast, Blank does not teach or suggest “[a]n image processing system comprising means for electronically displaying an image, means for capturing a first version of said displayed image, and means, connected to said means for electronically displaying and said means for capturing, for passively testing said first version of said displayed image captured by said means for capturing to determine if a portion of said displayed image is blocked from said means for capturing and for actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said means for capturing, wherein said second version of said displayed image is captured by said means for capturing after being displayed on said means for electronically displaying.” (Claim 25).

Again, the final Office Action argues that “with regard to claim[] 25 . . . see the rationale for claim 7.” (final Office Action, p. 6). Thus, the final Office Action rejects claim 19 using the arguments presented in connection with independent claim 7. In light of this, the final Office Action argues that “Blank reads on a method for processing a display image (see figure 1) comprising steps of passively testing a first version of a displayed image . . . , and . . . actively testing a portion of said displayed image . . . being displayed on said display device” (final Office Action, pp. 4-5).

However, the final Office Action’s assertions that Blank teaches the recitations of claim 25 are incorrect. As similarly stated above in connection with independent claims 7, 13, and 25, Blank is merely directed to the use of a blue or green monochromatic screen in a

system that utilizes chromakey, and does not teach a display device used to produce a displayed image. (*See*, Blank, col. 6, ll. 2-3).

On this point, the final Office Action argues that with regard to Figure 1 of Blank, “the object, 22, and the display device, 24, is constantly shown on the electronic display device, 20.” (final Office Action, p. 2). However, as similarly argued above in connection with the patentability of independent claims 7, 13, and 19, the video camera 16 of Blank is entirely incapable of imaging the monitor 20, and does not teach or suggest that the video camera 16 is capable of imaging the images displayed on the monitor 20. Therefore, Blank does not teach or suggest “means for capturing a first version of said displayed image.” (Claim 25).

Again, as similarly argued above in connection with the patentability of independent claims 7, 13, and 19, the final Office Action is not considering the recitation that “wherein said second version of said displayed image is captured by said means for capturing after being displayed on *said means for electronically displaying*.” (Claim 25) (emphasis added). Display of the subject 22 and monochromatic background 24 of Blank on a monitor cannot be interpreted to include capturing with an image capture device an image displayed on an electronic display since the monochromatic background is not an electronic display.

Still further, as similarly argued above in connection with the patentability of independent claims 7, 13, and 19, Blank does not teach or suggest “means . . . for *passively testing* said first version of said displayed image captured by said means for capturing . . . and for *actively testing* said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image.” (Claim 25) (emphasis added). Blank is silent with regard to a processor or other element configured to passively

and actively test a displayed images to determine if a portion of the displayed image is blocked from an image capture device.

Finally, in contrast to Blank, claim 25 recites displayed images being displayed on an electronic display device, not merely a monochromatic background. The display device is then imaged with an imaging device including any objects in the foreground, e.g. a person. The image is then processed to create a virtual shadow of any objects in the foreground, i.e., in front of the electronic display device. This subject matter is clearly not taught or suggested by Blank.

Respectfully, to anticipate a claim, a reference must teach each and every element of the claim, and “the identical invention must be shown *in as complete detail as contained in the ... claim.*” MPEP 2131 citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987) and *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989) (emphasis added). Moreover, “[t]he prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *NetMoneyIn v. Verisign*, (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542 (Fed. Cir. 1983)).

In the present case, Blank clearly does not disclose the claimed invention with each and every claimed element in the same amount of detail or as arranged in the claim. Consequently, because Blank clearly fails to satisfy the requirements for anticipating claim 25, the rejection of claim 25 should not be sustained.

Additionally, various dependent claims of the application recite subject matter that is further patentable over the cited prior art. Specific, non-exclusive examples follow.

Claims 8, 14, and 20:

Claim 8 recites:

The method of claim 7, wherein said step of passively testing further comprises the step of:

comparing a value of each pixel of said first version of said displayed image captured by said image capture device to a corresponding value of each pixel of said displayed image.

(Emphasis added).

Claims 14 and 20 recite similar language.

In contrast, Blank does not teach or suggest comparing a value of each pixel of a first version of a displayed image captured by an image capture device to a corresponding value of each pixel of the displayed image. Blank simply teaches the step of systematically comparing the hue gamma of a standard pixel with a neighboring pixel to determine if the neighboring pixel is different. In other words, the system of Blank simply compares neighboring pixels within a single image.

The final Office Action incorrectly excludes the recitations of claims from which claims 8, 14, and 20 depend. Specifically, the final Office Action argues that “[t]here [is] no limitation in claim 8, which cite[s] that the first version of a displayed image is not the same as the displayed image it self. So Blank's step of systematically comparing the hue gamma of a standard pixel with a neighboring pixel to determine if the neighboring pixel is different reads on the claimed limitation of claim [7].”

Appellant respectfully disagrees and points out that claim 8 depends from claim 7 (likewise, claims 14 and 20 depend from independent claims 13 and 19, respectively). Therefore, claim 8 includes the recitations of claim 7. More specifically, claim 8 recites that “step of passively testing [as recited in claim 7] further comprises the step of comparing a value of each pixel of ***said first version of said displayed image captured by said image***

capture device to a corresponding value of each pixel of said displayed image.” (Claim 8) (*see also*, similar recitations in claims 14 and 20). Claim 7 recites the step of “passively testing *a first version of said displayed image captured by an image capture device* to determine if a portion of said displayed image is blocked from said image capture device.” Therefore, claim 8 properly recites that the first version of a displayed image is not the same as the displayed image it self.

In contrast to Blank, claims 8, 14, and 20 recite comparing a value of each pixel of a first version of a displayed image captured by an image capture device to a corresponding value of each pixel of the displayed image. This subject matter is clearly not taught or suggested by Blank.

Again, to anticipate a claim, a reference must teach each and every element of the claim, and “the identical invention must be shown *in as complete detail as contained in the ... claim.*” MPEP 2131 citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987) and *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989) (emphasis added). Moreover, “[t]he prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *NetMoneyIn v. Verisign*, (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542 (Fed. Cir. 1983)).

In the present case, Blank clearly does not disclose the claimed invention with each and every claimed element in the same amount of detail or as arranged in the claim. Consequently, because Blank clearly fails to satisfy the requirements for anticipating claims 8, 14, and 20, the rejection of claims 8, 14, and 20 should not be sustained.

(2). Claims 12, 18, and 24 are patentable over Blank and Eschbach:

The rejection of claims 12, 18, and 24 should not be sustained for at least the same reasons given above in favor of the patentability of independent claims 7, 13, and 19, respectively.

In view of the foregoing, it is submitted that the final rejection of the pending claims is improper and should not be sustained. Therefore, a reversal of the Rejection of December 16, 2009 is respectfully requested.

Respectfully submitted,

DATE: April 16, 2010

/Steven L. Nichols/

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VIII. CLAIMS APPENDIX

1-6. (allowed)

7. (previously presented) A method for processing a displayed image comprising the steps of:

passively testing a first version of said displayed image captured by an image capture device to determine if a portion of said displayed image is blocked from said image capture device; and

actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device, wherein said second version of said displayed image is captured by said image capture device after being displayed on an electronic display device.

8. (previously presented) The method of claim 7, wherein said step of passively testing further comprises the step of:

comparing a value of each pixel of said first version of said displayed image captured by said image capture device to a corresponding value of each pixel of said displayed image.

9. (previously presented) The method of claim 7, wherein said step of actively testing further comprises the steps of:

changing a display value of said portion of said displayed image to generate said second version of said displayed image;

capturing said second version of said displayed image with said image capture device;
and

selectively confirming said portion of said displayed image as occluded based on an analysis of said second version of said displayed image.

10. (original) The method of claim 9, wherein said step of actively testing further comprises the step of:

testing another portion of said displayed image proximate said confirmed portion of said displayed image for occlusion.

11. (original) The method of claim 7, further comprising the step of:

actively testing all of the pixels of said displayed image, prior to said step of passively testing, to initialize an estimate of said displayed image.

12. (previously presented) The method of claim 7, further comprising the step of:

changing a threshold associated with said step of passively testing said first version of said displayed image, based upon a result of said step of actively testing said portion of said displayed image.

13. (previously presented) A computer-readable medium containing a program that performs the steps of:

passively testing a first version of a displayed image captured by an image capture device to determine if a portion of said displayed image is blocked from said image capture device; and

actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device, wherein said second version of said displayed image is captured by said image capture device after being displayed on an electronic display.

14. (previously presented) The computer-readable medium of claim 13, wherein said step of passively testing further comprises the step of:

comparing a value of each pixel of said first version of said displayed image captured by said image capture device to a corresponding value of each pixel of said displayed image.

15. (previously presented) The computer-readable medium of claim 13, wherein said step of actively testing further comprises the steps of:

changing a display value of said portion of said displayed image to generate said second version of said displayed image;

capturing said second version of said displayed image with said image capture device;
and

selectively confirming said portion of said displayed image as occluded based on an analysis of said second version of said displayed image.

16. (original) The computer-readable medium of claim 15, wherein said step of actively testing further comprises the step of:

testing another portion of said displayed image proximate said confirmed portion of said displayed image for occlusion.

17. (original) The computer-readable medium of claim 13, further comprising the step of:

actively testing all of the pixels of said displayed image, prior to said step of passively testing, to initialize an estimate of said displayed image.

18. (previously presented) The computer-readable medium of claim 13, further comprising the step of:

changing a threshold associated with said step of passively testing said first version of said displayed image, based upon a result of said step of actively testing said portion of said displayed image.

19. (previously presented) An image processing system comprising:

an electronic display for displaying an image;
an image capture device for capturing a first version of said displayed image; and
a processor, connected to said display and said image capture device for passively testing said first version of said displayed image captured by said image capture device to determine if a portion of said displayed image is blocked from said image capture device; and for actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said image capture device, wherein said second version of said displayed image is captured by said image capture device after being displayed on said electronic display.

20. (original) The system of claim 19, wherein said processor performs said passive testing by comparing a value of each pixel of said version of said displayed image captured by said image capture device to a corresponding value of each pixel of said displayed image.

21. (previously presented) The system of claim 19, wherein said processor performs said active testing by changing a display value of said portion of said displayed image to generate said second version of said displayed image; capturing said second version of said displayed image with said image capture device; and selectively confirming said portion of said displayed image as occluded based on an analysis of said second version of said displayed image.

22. (original) The system of claim 21, wherein said processor performs said active testing by testing another portion of said displayed image proximate said confirmed portion of said displayed image for occlusion.

23. (original) The system of claim 19, wherein said processor also performs active testing prior to said passive testing by actively testing all of the pixels of said displayed image to initialize an estimate of said displayed image.

24. (previously presented) The system of claim 19, wherein said processor also changes a threshold associated with said step of passively testing said first version of said displayed image, based upon a result of said step of actively testing said portion of said displayed image.

25. (previously presented) An image processing system comprising:

means for electronically displaying an image;

means for capturing a first version of said displayed image; and

means, connected to said means for electronically displaying and said means for capturing, for passively testing said first version of said displayed image captured by said means for capturing to determine if a portion of said displayed image is blocked from said means for capturing and for actively testing said portion of said displayed image based on said first version of said displayed image and a second version of said displayed image to confirm whether said portion of said displayed image is blocked from said means for capturing, wherein said second version of said displayed image is captured by said means for capturing after being displayed on said means for electronically displaying.

IX. Evidence Appendix

None

X. Related Proceedings Appendix

None